



10 CFR 50.4(b)(6)  
10 CFR 50.71(e)  
10 CFR 50.59(d)(2)

RS-20-028

March 31, 2020

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Clinton Power Station, Unit 1  
Facility Operating License No. NPF-62  
NRC Docket No. 50-461

Subject: Clinton Power Station Updated Safety Analysis Report (USAR), Revision 21

In accordance with the requirements of 10 CFR 50.71, "Maintenance of records, making of reports," paragraph (e)(4), Exelon Generation Company, (EGC), LLC submits Revision 21 to the Updated Safety Analysis Report (USAR) for Clinton Power Station.

The USAR is being submitted on Optical Storage Media (OSM) in its entirety, including documents incorporated by reference (Clinton Operational Requirements Manual (ORM) updated through Revision 86, Clinton Technical Specifications Bases (TSB) updated through Revision 20-12). USAR pages changed as a result of this update are delineated with "Rev. 21, March 2020" in the page footer.

Changes to the USAR, ORM and TSB have been made under the provisions of 10 CFR 50.59, "Changes, tests, and experiments." EGC has evaluated these changes in accordance with 10 CFR 50.59 and concluded that the changes do not require prior NRC approval.

Attachment A provides a brief summary of the changes incorporated into USAR Revision 21.

Attachment B provides the required summary report pursuant to 10 CFR 50.59(d)(2).

Attachment C contains a summary of regulatory commitment changes.

Attachment D summarizes the changes to the ORM.

Attachment E provides a required summary report pursuant to 10 CFR 72.48.

Attachment F contains the directory path, filename, and size of each individual file.

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One (1) OSM is included in this submission. The OSM labeled, "Exelon Generation, Clinton Power Station, USAR Revision 21, March 31, 2020," contains the following components:

001 CPS USAR Rev. 21.pdf, 719 megabytes (MB)  
002 CPS ORM.pdf, 1.07 MB  
003 CPS TSB.pdf, 1.87 MB

As required by 10 CFR 50.71(e)(2)(i), I certify that to the best of my knowledge, the information contained in the enclosures and attachments to this letter accurately reflect information and analyses submitted to the NRC or prepared pursuant to NRC requirements, and changes made under the provisions of 10 CFR 50.59.

There are no new commitments made in this document. Should you have any questions concerning this letter, please contact:

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Respectfully,



David M. Gullott  
Director – Licensing

Enclosure: OSM – Exelon Generation, Clinton Power Station, USAR Revision 21,  
March 2020

Attachments:

Attachment A - CPS USAR Revision 21 Change Summary Report  
Attachment B - CPS 10 CFR 50.59 Summary Report  
Attachment C - CPS Summary of Regulatory Commitment Changes  
Attachment D - CPS Summary of Operational Requirements Manual Changes  
Attachment E - CPS 10 CFR 72.48 Summary Report  
Attachment F - CPS OSM Directory Structure

cc: NRC Regional Administrator – NRC Region III  
NRC Senior Resident Inspector – Clinton Power Station

**Attachment A**  
**CPS USAR Revision 21 Change Summary Report**  
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**USAR 2017-005**      **Revise Dose Analyses due to Impact of Single Failure of MCR Outside Air Intake Dampers**

This change provides additional information in regard to single failure to of outside air intake dampers for USAR Sections 6.4.3, 6.4.4.1, 9.4.1.1.1, 9.4.1.2, 9.4.1.3, 15.4.9.5.1.4, 15.6.5.6, and 15.7.4.2 including their associated figures and tables. This change is supported by the Engineering Analysis performed under EC 617541 that provides technical justification and was concluded that prior NRC approval was not required via 10 CFR 50.59 Applicability Determination.

**USAR 2017-015**      **Modify Switch S60 to Allow Fail-Open of Offgas Isolation Valve 1N66F060 To Prevent Loss of Vacuum**

This change identifies that, in off-normal situations such as both monitors failing, the discharge isolation valve closure signal may be overridden to open the valve to maintain vacuum. Updated Safety Analysis Report (USAR) Sections 11.3.2.2.1.8 and 11.5.2.2.2 were affected by this change. This change is supported by the Engineering Analysis performed under EC 620030 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2017-S-030 that concluded prior NRC approval was not required.

**USAR 2017-018**      **Remove SPDS Components from The TSC – Part of Cyber Remediation Activities to Remove Level 3 CDAs Outside the PA Fence**

This change removes Level 3 Safety Parameter Display System (SPDS) Plant Process Computer System (PPCS) components from the Technical Support Center (TSC) such as workstations, network switches, monitors, keyboards, mice, printer, and fiber converter. USAR Sections 7.7.1.26.3.2, 7.7.1.26.4.6, and 7.7.1.28.3.1 were affected by this change. This change is supported by the Engineering Analysis performed under EC 621521 that provides technical justification and the 10 CFR 50.59 Screening CL-2017-S-041 and 10 CFR 50.54(q) Evaluation 17-133 that concluded prior NRC approval was not required.

**USAR 2018-011**      **Replace 1E12F046A and 1E12F018A with Alternate Designs and 1RH19AA and 1RH18AB with Stainless Steel**

This change updates USAR Figures 3.6-1 Sheet 62 and 6.2-147 Sheet 1 to show change in location of the piping design table Code Breaker and the addition of slip-on flanges. This change is supported by the Engineering Analysis performed under EC 624194 that provides technical justification and that the USAR described functions and requirements of the minimum flow line are not affected by the addition of slip-on flanges, or the material and valve change.

**USAR 2018-012**      **Revision to Spent Fuel Pool Thermal Response for 24 Month Refueling Cycle**

This change updates the Spent Fuel Pool decay heat load, bulk temperature, time to boil, and boil-off rate to address station transition to a 24 month refueling cycle for USAR Sections 9.1.3.3.1 and 9.1.3.3.3. This change is supported by the Engineering Analysis performed under EC 622847, Calculation 01FC43, that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2018-S-015 that concluded prior NRC approval was not required.

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**USAR 2018-013**      **Replace 1TRCM335 with a Yokogawa DX1006N**

This change removes the specified number of pens on the associated recorder from USAR Section 7.5.1.4.2.4(3) c. This change is supported by the Engineering Analysis performed under EC 624263 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2018-S-016 that concluded prior NRC approval was not required.

**USAR 2018-014**      **Phase II Recorder Replacement**

This change removes the specified number of pens on a associated recorder and replaces "pen" with "input" for USAR Sections 7.5.1.4.2.2, 7.5.1.4.2.4, 7.5.2.4.2, and 7.7.1.1.5.2. This change is supported by the Engineering Analysis performed under EC 623340 that provides the technical justification and the 10 CFR 50.59 Screening performed under CL-2018-S-010 that concluded prior NRC approval was not required.

**USAR 2018-015**      **Incomplete Incorporation of Amendment 166 (US NRC Ascension ML052210006)**

This change incorporates the more generic term of "Federal or State Permitting Authority" and removes "Illinois Environmental Protecting Agency" from USAR Sections 1.2.2.8.7 and 9.2.4.1.2. This change is supported by the NRC Safety Evaluation for Clinton License Amendment 166 under US NRC Letter ML052210006.

**USAR 2018-019**      **Incorporate Information from Previously Approved USAR Change Package 2006-026**

This change is to USAR Tables 3.2-1 and 9.1-1 and USAR Sections 9.1.2.2.2.3, 9.1.4.2.8, and 9.1.4.2.10.2.3.5 to delete information about the use of Defective Fuel Storage Containers that have been removed from the Containment and Fuel Building. This change is supported by the Engineering Analysis performed under EC 362811 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2006-S-051 that concluded prior NRC approval was not required.

**USAR 2018-020**      **Incorporate Information from Previously Approved USAR Change Package 2011-012**

This change is to USAR Figure 2.5-484A to incorporate EC 384689 "Earthwork for New Cycled Condensate Storage Tank" modification. This change is supported by the Engineering Analysis performed under EC 384689 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2011-S-022 that concluded prior NRC approval was not required.

**USAR 2018-022**      **Make Reference to Containment and Reactor Vessel Isolation Control System Consistent**

This change is to align USAR Figure 15A.6-28 and USAR Section 15A.6.3.3 Events 20, 28, and 29 with Chapters 6, 7, 8, 10 by removing "Primary" from Primary Containment and Reactor Vessel Isolation Control (PCRVICES).

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**USAR 2018-023**      **Revise USAR Table 6.2-47 to Incorporate Deleted Information and Enhancements**

For USAR Table 6.2-47, this change deletes reference to isolation trip "F" (Main Steam Tunnel Differential Temperature High), adds Containment Isolation Valves per the NRC Safety Evaluation for Amendment 37, and adds notes for specific valves per NRC Enforcement Guidance for Hot Shorts. This change is supported by the Engineering Analyses performed under ECs 331718/331719/331720/331721/386186/386212 that provide technical justification and NEI 98-03 Rev. 1 Sec. A5 guidance for removing unnecessary information as the equipment was no longer installed in the plant.

**USAR 2018-024**      **Provide Clarification that the Electrical Protection Assembly Components are Distributed Between the Inverter and a Separate Panel Enclosure near the Inverter cabinet**

This change provides additional wording to USAR Section 7.2.1.1.3.1 as to the location of the Electrical Protection Assembly components and updated Figure 7.2-10 to match equipment. This change is supported by the Engineering Analysis performed under EC 620644 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2018-S-037 that concluded prior NRC approval was not required.

**USAR 2018-025**      **Clarify Refuel Platform Control Point Locations**

This change provides additional description to USAR Sections 9.1.4.2.7.1 and 9.1.4.2.10.2.4.1 as to how the operation of the refuel platform can be performed from the monorail pendant. This change is supported by the Engineering Analysis performed under EC 331246 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2018-S-039 that concluded prior NRC approval was not required.

**USAR 2018-026**      **Clarify Fuel Handling Platform Control Point Locations**

This change provides additional description to USAR Section 9.1.4.2.7.3 as to how the operation of the refuel platform can be performed from the monorail pendant. This change is supported by the Engineering Analysis performed under EC 391524 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2012-S-046 that concluded prior NRC approval was not required.

**USAR 2018-027**      **Clarify 4 Pump Condensate Pump Operating Response to a Transfer from the UAT to the RAT**

This change provides additional wording to USAR Section 10.4.7.2.1 to describe the plant electrical response to four condensate pumps being in service and a transfer from the Unit AUX Transformer to the Reserve AUX Transformer. This change is supported by the Engineering Analysis performed under EC 354802 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2005-S-024 that concluded prior NRC approval was not required.

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**USAR 2018-028**      **Incorporate Information from Previously Approved USAR Change Package 2009-007**

This change is to USAR Table 7.1-13 to change the Quality Assurance Column of Containment and Drywell Hydrogen Concentration from "Complies" to "No." This change is supported by the Engineering Analysis performed under EC 370685 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2009-S-011 that concluded prior NRC approval was not required. This change aligns USAR Table 7.1-13 with the changes associated with USAR Change Package 2009-007.

**USAR 2018-029**      **Incorporate Information from Previously Approved USAR Change Package 10-084**

This change to USAR Figures 3.6-1 sheet 64 and 6.2-147 sheet 3 removes abandoned in-place components for valve 1E12-F041C. This change is supported by the Engineering Analysis performed under DCP 333399 that provides technical justification and the 10 CFR 50.59 Evaluation performed under 2000-068 that concluded prior NRC approval was not required.

**USAR 2018-030**      **Incorporate Information from Previously Approved USAR Change Package 10-140**

This is a change to USAR Section 15D.9 boron concentration from "850 ppm" to "1000 ppm." This change is supported by the Engineering Analysis performed under EC 339004 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2003-S-034 that concluded prior NRC approval was not required. This change aligns USAR Section 15D.9 with the changes associated with USAR Change Package 10-140.

**USAR 2018-031**      **Incorporate Information from Previously Approved USAR Change Package 2004-025**

This change is to USAR Section 9.1.2.2 to include the fuel cask storage pool. This change is supported by the NRC Safety Evaluation for Clinton License Amendment 170.

**USAR 2018-032**      **Incorporate Information from Previously Approved USAR Change Package 10-058**

This change to USAR Section 7.6.1.2.1.12 provides more specific information regarding how the high-high radiation trip setpoint is established. This change is supported by the Engineering Analysis performed under EC 332064 that provides technical justification and the 10 CFR 50.59 Evaluation performed under CL-2001-E-0115 that concluded prior NRC approval was not required. This change aligns USAR Section 7.6.1.2.1.12 with the changes associated with USAR Change Package 10-058.

**USAR 2018-033**      **Fire Zone Floor Drains**

This change revises USAR Appendix E 3.4.1.3 Fire Zone CB-1C; Elevation 719' – 0" General Access and HVAC Area's description of the number of floor drains from "thirty-seven" to "thirty-four." This change is supported by the Engineering Analysis performed under EC 377321 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2010-S-010 that concluded prior NRC approval was not required.

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**USAR 2018-035**      **Add Hydrogen Water Chemistry Equipment Location**

This change provides an additional description of the location of Hydrogen Water Chemistry equipment being outdoors "O" to USAR Table 3.2-1. This change is supported by the Engineering Analysis performed under DCP 331590 that provides technical justification and the 10 CFR 50.59 Evaluation performed under CL-2001-S-0151 that concluded prior NRC approval was not required.

**USAR 2018-036**      **Incorporate Information from License Amendment 142**

This change makes USAR Sections 1.8, 8.3.2.1.2.1, and 8.3.2.2.2.4 consistent with NRC Safety Evaluation for Amendment 142 by providing reference to Technical Specification 5.5.14. This change is supported by the NRC Safety Evaluation for Clinton License Amendment 142 under US NRC Letter ML020390003.

**USAR 2018-037**      **Clarify Main Steam Line Turbine Bldg Temp High Trip Channel Description**

This change provides updated information to USAR Sections 7.3.1.1.2.4.1.3.1 and 7.3.1.1.2.4.1.3.3 regrading channel configuration for main steam line turbine building temperature trip channels. This change is supported by the NRC Safety Evaluation for Clinton License Amendment 25.

**USAR 2018-038**      **Incorporate Information for Specific Valves Table 1.8-2 for USAR Accuracy**

This change updates USAR Table 1.8 notes with additional information that reflect the actions Clinton took in response to NRC Memorandum 09-002 and Regulatory Guide 1.189 Revision 2 for a postulated fire that can potentially initiate hot shorts that could result in spurious reposition of specific motor operated valves (MOVs). This change is supported by the Engineering Analyses performed under ECs 3861861/386210/386211/386212/386213/386214/386215 that provide technical justification and the 10 CFR 50.59 Screening performed under CL-2011-S-035 that concluded prior NRC approval was not required.

**USAR 2018-039**      **Incorporate Information for Specific Valves for USAR Accuracy and Consistency**

This change updates USAR Tables 3.9-5, 3.9-6, 5.2-9a, and 5.4-2 and USAR Section 5.4.6.2.2.2 to reflect the actions Clinton took in response to NRC Memorandum 09-002 and Regulatory Guide 1.189 Revision 2 for a postulated fire that can potentially initiate hot shorts that could result in spurious reposition of specific MOVs. This change is supported by the Engineering Analyses performed under ECs 386186/386212/386215/390556/392017/386211/341504/386214/3862017/368665 that provide technical justification and the 10 CFR 50.59 Screening performed under CL-2011-S-035 that concluded prior NRC approval was not required.

**USAR 2018-040**      **Correct Regulatory Guide 1.60 Position and Revise Affected Sections and Figures Accordingly**

This change provides additional information to USAR Figures 3.7-12 and 3.7-15 and USAR Sections 1.8, 2.5.2.6, 2.5.2.7.1, and 3.7.1.1 with clarification as to how Clinton Power Station (CPS) complies with Regulatory Guide 1.60 in Sections 2.5.2.6 and 2.5.2.7.1. This change is supported by the technical justification within Supplemental Safety Evaluation Report (SSER) 3 (CPS Seismic Response Spectra Design Criteria DC-SD-02-CP R/0) and the 10 CFR 50.59 Screening performed under CL-2018-S-055 that concluded prior NRC approval was not required.

**USAR 2018-041**      **Chapter 7 Changes due to Valve Control Changes**

USAR Table 7.5-1 and USAR Sections 7.4.1.4.4.2 and 7.4.1.4.4.3 are revised to address hot shorts for valves 1E51-F068, 1E12-F037A, 1E12-F037B and 1E12-F010. 1E51-F068 is opened and a shorting switch is closed at the motor control center (MCC). The remaining valves are listed above are closed and their breakers in the MCC are opened to prevent inadvertent operation. This change is supported by the Engineering Analyses performed under ECs 385211/386186/386212/390556 that provide technical justification and the 10 CFR 50.59 Screening performed under CL-2011-S-035 that concluded prior NRC approval was not required.

**USAR 2018-042**      **Incorporate Addition of New Off Gas Pressure Switch into USAR Description**

This change provides clarification to USAR Section 10.4.2.5.1 on the differential flow switch configuration for steam jet air ejector steam flow. This change is supported by the Engineering Analysis performed under EC 364245 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2007-S-044 that concluded prior NRC approval was not required.

**USAR 2018-043**      **USAR Chapter 9 Changes from USAR Upgrade Project**

This changes USAR Figure 9.1-14; USAR Table 9.1-1; and USAR Sections 9.1.3.2, 9.1.4.2.3.10, 9.2.2.1 d, 9.2.2.5, 9.2.7.5, 9.4.6.2.2 I(2), and 9.4.7.2.1.1. These changes provide additional information and provide accurate system descriptions that are supported by the Engineering Analyses performed under ECs 330625/332988/338993/338994/344339/356821, the 10 CFR 50.59 Screenings performed under CL-2001-S-37/CL-2002-S-0012/CL-2003-S-010/CL-2003-S-049/CL-2003-S-119/CL-2005-S-061 that concluded prior NRC approval was not required, and the NRC Safety Evaluations for Clinton License Amendment 7 under US NRC Letter ML032340493 and for Clinton License Amendment 158 under US NRC Letter ML032680621.

**USAR 2018-044**      **Delete reference to "unreviewed safety question" pursuant to Amendment No. 151**

This USAR change eliminates the term "unreviewed safety question" from USAR Appendix D (I.D.1 5.1.d) and USAR Sections 7.7.2.26.2 and 13.5.1.2 to align with the removal of the term from Clinton Technical Specifications per License Amendment 151. This change is supported by the NRC Safety Evaluation for Clinton License Amendment 151 under US NRC Letter ML021360002.



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**USAR 2018-051**      **Incorporate Information Previously Approved in USAR Chane Package 2005-042**

This change to USAR Figure 6.2-147 Sheet 2 and USAR Sections 5.4.7.1.3 and 6.2.6.3 provides additional information regarding a leakoff line connected to an upstream orifice to prevent leakage past containment isolation valves from causing high pressure alarms. This change is supported by the Engineering Analysis performed under EC 356820 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2005-S-078 that concluded prior NRC approval was not required, and the NRC Safety Evaluation for Clinton License Amendment 145 under US NRC Letter ML020660002.

**USAR 2018-052**      **Clarify Removal of Steam Blanketing Capability**

This change deletes reference to steam blanketing capability of the moisture separator reheaters that was deleted by EC 397914 from USAR Table 9.2-1 item 7 and USAR Section 1.2.2.8.13. This change is supported by the Engineering Analysis performed under EC 397914 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2014-S-041 that concluded prior NRC approval was not required.

**USAR 2018-053**      **Incorporate Information Missed in Previously Approved USAR Change Package 2014-019**

This change to USAR Table 6.3-11 provides additional information on Fukushima Flex Low Pressure Core Spray (LPCS) Flange Connection for Flex Pumps to Support NEI 12-06 Flex Response. This change is supported by the Engineering Analysis performed under EC 392341 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2014-S-027 that concluded prior NRC approval was not required.

**USAR 2018-054**      **Revise USAR Section 12.4.1.4.1 a to Reflect Removal of SDV Flushing Lines**

This change removes the discussion of the Scram Discharge Volume (SDV) flushing lines and revises the text to discuss the installation of the hydrolyze connections in the existing blind flanges for each SDV header from USAR Section 12.4.1.4.1(a). This change is supported by the Engineering Analysis performed under EC 349394 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2005-S-017 that concluded prior NRC approval was not required.

**USAR 2018-055**      **Revise USAR to Reflect Amendment 164 to Eliminate the Need for H2 Recombiners**

This change is to reflect the NRC elimination of the design basis loss of coolant accident (LOCA) hydrogen release from 10 CFR 50.44 and consolidation of requirements for hydrogen and oxygen monitoring while relaxing the safety classifications and licensee commitments to certain design and qualification criteria. These changes being reflected in USAR Sections 1.2.2.4.9.4, 6.0, 6.2.5, 6.2.5.1.1, 6.2.5.1.2.4, 6.2.5.1.2.4.2, 6.2.5.1.3, 6.2.5.1.4, 7.1.1.2(17), 7.1.2.2.2.4, 7.1.2.2.3.7, 7.3.1, 7.3.1.1.7.1, 7.3.2.7, 7.2.3.7, 7.5.1.4.2.8, 9.4.5, and 9.4.5.5.1; USAR Tables 3.2-1, 3.6-1, 6.1-1, 7.1-1, 7.1-3, 6.2-125, 6.2-126, 6.2-127, 6.2-128A, 6.2-128B, 6.2-129A, 6.2-129B, 6.2-130A, and 6.2-130B. These changes were supported by the NRC Safety Evaluation for Clinton License Amendment 164 under US NRC Letter ML050910194.

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**USAR 2018-056**      **Revise USAR Section 4.6.3.1.1.5 to Reflect SCRAM Time Testing at Power**

This change provides additional discussion to USAR Section 4.6.3.1.1.5 on SCRAM Time Testing at power for surveillance testing in the Control Rod Drive System. This change is supported by the NRC Safety Evaluation for Clinton License Amendment 177 under US NRC Letter ML070650616.

**USAR 2018-057**      **Additional Change due to EC Not Captured in USAR Change 2015-001**

This change deletes reference to permanently deleted steam blanketing of the moisture separator reheater from USAR Table 9.2-1. This change is supported by the Engineering Analysis performed under EC 397914 that provides technical justification and it aligns USAR Table 9.2-1 with the changes already made under 2015-001 to USAR Section 9.5.9.2 regarding steam blanketing.

**USAR 2018-058**      **Complete USAR Revision Required by EC 366599**

This change revises USAR Section 3.5.3 to clarify that steel grating used for tornado barriers is analyzed as steel plate. This change is supported by the Engineering Analysis performed under EC 366599 that provides technical justification and the 10 CFR 50.59 Screening and Evaluation performed under CL-2007-S-032/CL-2007-E-043 that concluded prior NRC approval was not required.

**USAR 2018-059**      **Table 10.4-2 Tube Count**

This change revises USAR Table 10.4-2 to reflect that 10 tubes have been removed from the main condenser. This change is supported by the Engineering Analysis performed under EC 169704 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2018-S-043 that concluded prior NRC approval was not required.

**USAR 2018-069**      **Correct Typo Error in USAR section 6.2.1.1.4.2**

This change corrects a typo error identified in USAR Section 6.2.1.1.4.2 for the Drywell Free Air Volume value to match the value stated in calculation 3C10-0779-001 and 01SM07. This change is supported by calculations 3C10-0779-001/01SM07.

**USAR 2018-070**      **Added 10.4.7.1.2 Performance Requirements which was deleted in previous revision of USAR**

This change adds thermal performance information in USAR Section 10.4.7.1.2 as approved by the NRC under NEDO-32989 Rev. 0. This change is supported by calculations EPU-T0100, IP-M-0640, and NEDO-32989 Rev. 0 and it is information provided in the original Final Safety Analysis Report (FSAR) and not expected to be used to support current or future plant operations or regulatory activities by equivalent methods approved under NEDO-32989 Rev. 0.

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**USAR 2018-071**      **Correct Error in USAR Section 1.8 which List Reg Guide 1.163 Deleted Option B NEI 94-01 per Amendment Number 214**

This changes the reference in USAR Section 1.8 from "RG 1.163 Rev. 0" to "Option B of NEI 94-01 Rev. 2-A" per Amendment 214. This change is supported by the NRC Safety Evaluation for Clinton License Amendment 214.

**USAR 2018-072**      **Correct Error in USAR Section 9.4.7.2.1.1.c per SER ¼ .6.2.7 Amendment No. 7**

This change provides additional information to USAR Section 9.4.7.2.1.1.C to meet the Drywell Vent and Purge requirements outlined in the NRC Safety Evaluation for License Amendment 7. This change is supported by the NRC Safety Evaluation for Clinton License Amendment 7.

**USAR 2018-073**      **Editorial Change/Clarification to Clinton USAR Appendix F Section 3.1.2.5 Bullet 7**

This change provides clarity to USAR Appendix F Section 3.1.2.5 regarding manual action for removal of fuses applicability being only to Fire Zone A-2n during a fire. This change eliminates inconsistencies between CPS procedure 1893.04 and USAR Appendix F and accuracy verified to Calculation IP-M-0532.

**USAR 2018-074**      **TRACG Implementation**

This change updates USAR Section 15D.15.1.2.3.1 and 15D.16 to reflect the implementation of TRACG methodology at Clinton replacing the previous ODYN method used for Pressurization transients. This change is supported by the Engineering Analysis performed under EC 625039 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2018-S-054 that concluded prior NRC approval was not required.

**USAR 2018-075**      **Update Max Suppression Pool Level Revised in License Amendment 156**

The change raises the maximum suppression pool level from 731'5" to 732'1" for Mode 3 at reactor pressure less than 235 psig. This change is supported by the Engineering Analysis performed under EC 626372 that provides technical justification and the NRC Safety Evaluation for Clinton License Amendment 156.

**USAR 2018-076**      **Update to Clarify Doors Subject to the Deviation Request and Correct Fire Area Designation**

This change removes Containment Personnel airlocks identification as Transient Combustible Free Zones from USAR Figures FP-3b and FP-7b, and provides additional information to USAR Appendix F Section 4.2.2.14.1 on two doors. This change is supported by the Fire Protection Engineering Evaluation performed under EC 626754.

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**USAR 2018-078**      **12kV Breaker Add for the Cooling Towers**

This change updates USAR Figure 8.2-2 and USAR Section 8.2.1.1 with a description of equipment powered by the Supplemental Cooling and Auxiliary Boiler (SCAB) substation to include the new 12kV breaker. This change is supported by the Engineering Analysis performed under EC 625784 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2018-S-058 that concluded prior NRC approval was not required.

**USAR 2019-001**      **CPS Pressurization Events Update**

This change updates the USAR to reflect implementation of the TRACG-AOO methodology for USAR Sections 15D.4.4, 15D.15.0, 15D.15.1.2.3.2, 15D.15.1.2.3.3, 15D.15.1.2.1.1.1, 15D.15.2.1.3.2, 15D.15.2.1.3.3, 15D.15.2.2.2.2, 15D.15.2.2.3.2, 15D.15.2.2.3.3, 15D.15.2.3.2.3.1, 15D.15.2.3.3.3, and 15D.16; USAR Tables 15D.15.1.2-1, 15D.15.2.1-1, 15D.15.2.2-1, and 15D.15.2.3-1. This change is supported by Transient Analysis under 004N5632/NEDE-32906P-A Rev. 3 and the 10 CFR 50.59 Screening performed under CL-2019-S-006 that concluded prior NRC approval was not required.

**USAR 2019-002**      **12kV Breaker Add for the Cooling Towers**

This change updates USAR Section 8.2.1.1 electrical loading limitation on 138 kV line by having the 138 kV line not considered operable per Technical Specifications if loading on the SCAB substation is increased above 18,904 kVA (18.904 MVA). This change is supported by the Engineering Analysis performed under EC 625784 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2018-S-058 that concluded prior NRC approval was not required.

**USAR 2019-003**      **Upgrade Existing Lighting Fixture in Turbine Building and Fuel to LED Technology**

This change includes LEDs as part of normal CPS lighting system by adding "Light Emitting Diode (LED)" to USAR Section 9.5.3.1.1. This change is supported by the Engineering Analysis performed under EC 627805 that provides technical justification and it adds clarifying information to describe CPS's lighting system in the USAR.

**USAR 2019-006**      **Use of GNF Armor and IronClad Lead Test Assemblies in Clinton Cycles 20 through 22**

This change adds a new USAR Sections 4.2.7 to describe Accident Tolerant Fuel Lead Test Assemblies that are being loaded during C1R19. In addition, the references section changes to USAR Section 4.2.8. This change is supported by the Engineering Analysis performed under EC 627786 that provides technical justification and the 10 CFR 50.59 Evaluation performed under CL-2019-E-007 that concluded prior NRC approval was not required.

**Attachment A**  
**CPS USAR Revision 21 Change Summary Report**  
**Page 11 of 12**

**USAR 2019-007**      **Revise USAR 7.2.1.1.4.2 (1)**

This change incorporates Mode 5 applicability note from Technical Specifications Table 3.3.1.1-1 that intermediate range monitors (IRMs) are only required operable with any control rod withdrawn from a core cell containing one or more fuel assemblies to USAR Section 7.2.1.1.4.2(1)(a). This change is supported by the NRC Safety Evaluation for Clinton License Amendment 95.

**USAR 2019-009**      **Clinton Reload 19 Cycle 20 USAR Markups**

This change removes ambiguity from the USAR of the impact of Regulatory Guide 1.70 published in the 1970s with updates to reflect that thermal limits are in the Core Operating Limits Report (COLR) for core reloads, clarify historical information, add Main Steam Isolation Valve and Safety Relief Valve Out of Service analyses, and add clarity regarding the Loss of Feedwater Heating (LFWH) events. This change is supported by the Engineering Analysis performed under EC 625644 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2019-S-023 that concluded prior NRC approval was not required.

**USAR 2019-013**      **Thrust Bearing Wear Detector Automatic Turbine Trip Defeated**

This change is associated with the permanent disabling of the Thrust Bearing Wear Detector automatic turbine trip signal and adds a note to USAR Section 10.2.2.5 that excessive thrust bearing wear trip will be performed manually until the circuit is upgraded to address spurious trip operating experience. This change is supported by the Engineering Analysis performed under EC 629425 that provides technical justification and the 10 CFR 50.59 Evaluation performed under CL-2018-E-013 that concluded prior NRC approval was not required.

**USAR 2019-014**      **ASME Code Reconciliation for Revised Allowable Stress Values**

This change adds a note to USAR Tables 3.2-3, 3.2-4, and 3.9-2 that the use of revised allowable stress values for ASME Section III, Class 2 and 3 piping components within the 2001 Edition through 2003 Addenda has been reconciled and is acceptable for design evaluations, modifications, repairs, and replacements. This change is supported by the Engineering Analysis performed under EC 629718 that provides technical justification and the 10 CFR 50.59 Screening performed under CL-2019-S-030 that concluded prior NRC approval was not required.

**USAR 2019-016**      **Issue PRA For OPD with Alarm Only, Revise UFSAR Sec. 8.2 & 8.3 Regarding OPD**

This change removes reference to tripping and monitoring period from the Open Phase detection and protection description from USAR Sections 8.2.1.2 and 8.3.1.1.1. In addition, references to open phase relays having the ability to trip the 138kV circuit switcher were removed from these sections. This change is supported by NEI 19-02 guidance, Engineering Analysis performed under EC 629986 that provides technical justification, and the 10 CFR 50.59 Screening performed under CL-2020-S-006 that concluded prior NRC approval was not required.

**Attachment A**  
**CPS USAR Revision 21 Change Summary Report**  
**Page 12 of 12**

**USAR 2019-017**      **Clarification of 13.5.2.1.3, Emergency Operating Procedures**

This change provides clarification to improve reader understanding without changing its meaning to USAR Section 13.5.2.1.3 and Table 13.5-5. This change is consistent with BWR Owners' Group Emergency Procedure and Severe Accident Guidelines, Appendix B and NEI 98-03 Rev. 1 Sec. A4 guidance for simplification of UFSAR/FPR Information.

**USAR 2020-001**      **Incorporation of TSTF-565**

This change deletes information from USAR Section 1.8 regarding a Technical Specifications Surveillance Requirement 3.0.2 Bases change to eliminate discussion regarding operational convenience per Traveler TSTF-565 Revision 1. The 10 CFR 50.59 Screening performed under CL-2020-S-02 concluded prior NRC approval was not required.

**Attachment B**  
**CPS 10 CFR 50.59 Summary Report**  
**Page 1 of 3**

This attachment contains 50.59 evaluation summaries performed for Clinton Power Station (CPS) during this reporting period.

**Activity Number /Title**

CL-2019-E-007

Use of GNF ARMOR and IronClad Test Assemblies in Clinton Cycles 20 through 22

**Description of Activity**

This activity allows loading of ARMOR and IronClad lead test assembly (LTA) designs in nonlimiting core locations during Reload 19, Cycles 20 through 22.

**Reason for Activity**

This activity is part of Exelon Nuclear's agreement to participate with Global Nuclear Fuel (GNF) in the U.S. Department of Energy Accident Tolerant Fuel (ATF) program to develop nuclear fuels with enhanced resistance to serve accidents.

**Bases for Not Requiring Prior NRC Approval**

The quantity and placement of the LTAs will not invalidate either the Updated Safety Analysis Report (USAR) Chapter 15 transient and accident analyses or Core Operating Limits Report (COLR) limits. In addition, LTA designs and core locations shall be established such that the LTAs will not be the bounding assembly for any design, performance, or safety analysis parameters during normal operation, anticipated operational occurrences, or accidents, based on planned control rod patterns. Therefore, the ability of all structures, systems, or components (SSCs) to perform their safety functions will not be dictated by the performance of the LTAs and there will be no adverse safety impact associated with the materials, operational performance, or analysis of the LTAs.

**Activity Number /Title**

CL-2018-E-013 Rev. 01

Thrust Bearing Wear Detector Automatic Turbine Trip Defeated

**Description of Activity**

This activity permanently disables the thrust bearing wear detector automatic turbine trip signal and replaces the function with manual operator trip capability and monitoring. Specifically, the means to defeat the main turbine thrust bearing wear detector (TBWD) trip, computer points, and annunciator inputs associated with oil pressure switches 1PSTO004B and 1PSTO005B by lifting one lead for each pressure switch. The TBWD will continue to be indicated and annunciated to operations personnel via annunciator window 5007-1C (or other indications). In addition, operator actions were revised to manually trip the turbine on high TDWD wear indication concurrently with high thrust bearing temperature.

**Reason for Activity**

Decrease the frequency of turbine trips from spurious TBWD signals and instrument failure.

**Attachment B**  
**CPS 10 CFR 50.59 Summary Report**  
**Page 2 of 3**

**Bases for Not Requiring Prior NRC Approval**

The purpose of the TBWD trip is to minimize the extent of damage to the turbine-generator by removing the source of energy, steam, prior to the operator's ability to act in some situations. The turbine-generator is not required to effect or support safe shutdown of the reactor or to mitigate the consequences of an accident and the turbine trip with and without bypass valves is analyzed as an anticipated operational transient in section 15.2.3 of the USAR. In addition, the TBWD pressure switches, associated trip instrumentation, and the process computer are non-safety-related equipment that are not relied upon to mitigate accidents or transients. Therefore, the activity does not result in a more than minimal increase in consequences of a malfunction or accident, impact any safety-related SSC's from performing their design function, nor create the possibility of an accident of a different type.

**Activity Number /Title**

CL-2019-E-031 Rev. 0

Revise Secondary Containment Design Basis to Credit Fuel Building Railroad Airlock

**Description of Activity**

The proposed activity revises the definition for the secondary containment boundary at the Fuel Building Railroad Airlock (FBRA) to ensure that both secondary containment capability and tornado protection are maintained when required. Specifically, this involves utilizing the FBRA and outer door as the secondary containment boundary when the inner door is open.

**Reason for Activity**

The FBRA inner door, Equipment ID Number (EIN) 1HC72G/1SD1-30 currently forms part of the secondary containment boundary. Each time this door is opened to move equipment in and out of the Fuel Building, the secondary containment is declared inoperable, and Technical Specifications Action Statement 3.6.4.1.A is entered. This Action Statement requires the secondary containment to be restored within 4 hours, which imposes a burden on plant operations, especially during independent spent fuel storage installation (ISFSI) campaigns where the large dry casks are moved into and out of the Fuel Building. Therefore, it is desired to revise the definition of the secondary containment boundary at the FBRA to ensure that both secondary containment capability and tornado protection are maintained when required. Specifically, this involves utilizing the FBRA and outer door as the secondary containment boundary when the inner door is open and no adverse weather conditions exist. In addition, specific, situational control of the inner door is included as part of this effort.

**Bases for Not Requiring Prior NRC Approval**

The proposed activity revises the definition of the secondary containment boundary at the FBRA to ensure that both secondary containment capability and tornado protection are maintained when required. Specifically, this involves utilizing the FBRA and outer door as the secondary containment boundary when the inner door is open and no adverse weather conditions exist. In addition, specific, situational control of the inner door is included as part of this effort. EC 395976 and 50.59 Review CL-2014-E-033 evaluated the FBRA to meet the design and functional requirements of Seismic Category I structures and the secondary containment,



**Attachment B**  
**CPS 10 CFR 50.59 Summary Report**  
**Page 3 of 3**

including impacts to the Standby Gas Treatment (SGT) system, except for protection from tornado winds and missiles. Per Regulatory Guide 1.117, it is not necessary to postulate a tornado concurrent with a loss-of-coolant accident (LOCA), but a tornado should be postulated in the post-LOCA long term cooling phase. The secondary containment integrity is ensured in the post-LOCA cooling phase by manual actions to close the FBRA inner door, which also acts as a tornado barrier. These actions include verifying there is no severe weather in the area for the period for which the FBRA inner door will be open and having dedicated personnel to close the FBRA inner door should severe weather or a radioactive release occur. Tornado protection is therefore ensured for the secondary containment and other SSCs that require it.

The proposed activity does not initiate any accidents and does not introduce new failure modes. There is no possibility for an accident of a different type or a malfunction of an SSC with a different result. Design basis limits for fission product barriers are not exceeded or altered. There is no departure from a method of evaluation described in the USAR.

**Attachment C**  
**CPS Summary of Regulatory Commitment Changes**  
**Page 1 of 1**

**Subject**

Change to Commitment Schedule to Implement Nuclear Energy Institute (NEI) Initiative on Open Phase Condition

**Existing Commitment Description**

Full implementation of the NEI Open Phase Initiative by December 31, 2019.

**Revised Commitment Description**

Full implementation of the NEI Open Phase Initiative by May 15, 2020.

**Justification**

The commitment implementation due date is being extended from December 31, 2019, to May 15, 2020, as the probabilistic risk analysis (PRA) analysis justifying alarm only function with operator action will be approved by December 31, 2019. Thus, additional time is needed to complete the Engineering Change (EC) package associated with the PRA analysis and operator training on responding to an Open Phase Condition (OPC).

**Attachment D**  
**CPS Summary of Operational Requirements Manual Changes**  
**Page 1 of 1**

There were two revisions to the Clinton Power Station (CPS) Operational Requirements Manual (ORM) that have been made during this reporting period.

The current revision of the CPS ORM is Revision 85.

Revision Number	Scope of Revision
84	Revision to Section 2.4 to align with CPS License Amendment 220 related to revising Technical Specification requirements for inoperable snubbers.
85	Revision to Section 2.2 to extend the Channel Functional Test for the Control Rod Block Instrumentation Surveillance Intervals. Specifically, the surveillance interval extended from 92 days to 184 days for the Channel Functional Test for the Average Power Range Monitors (APRM) - Control Rod Block Instrumentation in Section 4.2.1.2 and for the Reactor Coolant System Recirculation Flow – Control Rod Block Instrumentation in Section 4.2.5.2. This change was captured in USAR Change package 2019-012.

**Attachment E**  
**CPS 10 CFR 72.48 Summary Report**  
**Page 1 of 1**

This attachment contains 72.48 evaluation summaries performed for Clinton Power Station (CPS) during this reporting period.

**Activity Number/Title**

72.48-CL-2018-E-024

72.212 Evaluation Report Change Request

**Description of Activity**

The proposed activity addressed in this evaluation is updating the Clinton 72.212 report to document the storage of foreign material (FM) in MPC006 with a size and material characteristics documented in transmittal of design information (TODI) CPS-18-019, Characterization of FM Identified in MPC-006, Revision 0 that is bounded by that evaluated in Holtec 72.48 Evaluation 1355 for Foreign Material in MPC-89, Revision 1 for an MPC-89 to the Clinton design and licensing basis in TODI CPS-18-022, Transmittal of 72.212 Report Sect. 7.2 & 72.212 Change Number 72.212-CR-2017-002, Revision 0 and HI-2114830, Final Safety Analysis Report on the HI-STORM FW MPC Storage System, Revision 2.1.

**Reason for Activity**

During the 2018 Clinton dry storage campaign, FM was discovered in MPC006, TODI CPS-18-019, Characterization of FM Identified in MPC-006 Revision 0, through a review of video after the canister had been welded. The FM in the MPC consisted of a paint chip and duct tape pieces that were on top of the upper tie plate for different assemblies.

**Bases for Not Requiring Prior NRC Approval**

There are no malfunctions associated with the HI-STORM FW system due to the proposed activity and so no malfunction likelihood, consequences or results can be increased. The containment boundary remains unchanged, so no accident consequences can be increased. Methods of handling and operating the cask system are not affected, so no new accidents can be created. Cask system temperatures, including fuel cladding, are not increased beyond acceptable limits and MPC internal pressure is not increased beyond acceptable limits, so no fission product boundary limit is exceeded. No new evaluation methods are used.

**Attachment F**  
**CPS OSM Directory Structure**  
**Page 1 of 1**

<b>Directory Path</b>	<b>File Name</b>	<b>Size</b>
001 CPS USAR REV. 21	000 USAR Cover and LOEP.pdf	933 KB
001 CPS USAR REV. 21	001 CH 01 Intro and General Desc.pdf	1113 KB
001 CPS USAR REV. 21	002 CH 02 Site Characteristics.pdf	2450 KB
001 CPS USAR REV. 21	003 CH 02 Figures Part 1 of 2.pdf	45894 KB
001 CPS USAR REV. 21	004 CH 02 Figures Part 2 of 2.pdf	89981 KB
001 CPS USAR REV. 21	005 CH 03 Design of Struct Comp Equip.pdf	4378 KB
001 CPS USAR REV. 21	006 CH 03 Figures Part 1 of 5.pdf	41807 KB
001 CPS USAR REV. 21	007 CH 03 Figures Part 2 of 5.pdf	77531 KB
001 CPS USAR REV. 21	008 CH 03 Figures Part 3 of 5.pdf	78720 KB
001 CPS USAR REV. 21	009 CH 03 Figures Part 4 of 5.pdf	74654 KB
001 CPS USAR REV. 21	010 CH 03 Figures Part 5 of 5.pdf	99099 KB
001 CPS USAR REV. 21	011 CH 04 Reactor.pdf	3842 KB
001 CPS USAR REV. 21	012 CH 05 RCS and Connect Systems.pdf	3498 KB
001 CPS USAR REV. 21	013 CH 06 Engineered Safety Features.pdf	19013 KB
001 CPS USAR REV. 21	014 CH 07 Instrument and Control Sys.pdf	7246 KB
001 CPS USAR REV. 21	015 CH 08 Electric Power.pdf	1828 KB
001 CPS USAR REV. 21	016 CH 09 Auxiliary Systems.pdf	5656 KB
001 CPS USAR REV. 21	017 CH 10 Steam and Power Conv.pdf	1476 KB
001 CPS USAR REV. 21	018 CH 11 Radioactive Waste Mgmt.pdf	1178 KB
001 CPS USAR REV. 21	019 CH 12 Radiation Protection.pdf	2774 KB
001 CPS USAR REV. 21	020 CH 13 Conduct of Operations.pdf	467 KB
001 CPS USAR REV. 21	021 CH 14 Initial Test Program.pdf	955 KB
001 CPS USAR REV. 21	022 CH 15 Accident Analysis.pdf	14917 KB
001 CPS USAR REV. 21	023 CH 16 Technical Specifications.pdf	41 KB
001 CPS USAR REV. 21	024 CH 17 Quality Assurance.pdf	42 KB
001 CPS USAR REV. 21	025 APP A Glossary.pdf	79 KB
001 CPS USAR REV. 21	026 APP B Const Matl Stds and QC.pdf	125 KB
001 CPS USAR REV. 21	027 APP C Computer Programs.pdf	7091 KB
001 CPS USAR REV. 21	028 APP D TMI Requirements.pdf	2039 KB
001 CPS USAR REV. 21	029 APP E Fire Protection Report.pdf	1603 KB
001 CPS USAR REV. 21	030 APP E Figures Part 1 of 2	58102 KB
001 CPS USAR REV. 21	031 APP E Figures Part 2 of 2	50167 KB
001 CPS USAR REV. 21	032 APP F Safe Shutdown.pdf	38183 KB
002 CPS ORM	001 CPS ORM.pdf	1102 KB
003 CPS TSB	001 CPS TSB.pdf	1922 KB